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10/751,099	12/31/2003	Anees Narsinh	134170	1338
77216                      7590                      02/17/2010 ALCATEL-LUCENT C/O GALASSO & ASSOCIATES, LP P. O. BOX 26503 AUSTIN, TX 78755-0503				
EXAMINER				
SHIN, KYUNG H				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/751,099

**Applicant(s)**

NARSINH ET AL

**Examiner**

Kyung Hye Shin

**Art Unit**

2443

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/C)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date: \_\_\_\_\_

### **DETAILED ACTION**

1. This action is in response to amendment filed on 11-18-2009. Claims **1 - 12** are pending. Claim **3** has been amended. Claims **1, 2** are independent. Application was filed on 12-31-2003.

### ***Claim Rejections - 35 USC § 103***

**The text of Title 35, U.S. Code not included in this action can be found in a prior Office action.**

2. Claims **1 - 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Crinion et al.** (US Patent No. **6,181,699**) in view of **Hussain et al.** (US Patent No. **7,161,904**).

**Regarding Claim 1**, Crinion discloses a data link layer processor comprising:

a plurality of media access controllers, wherein each media access controller is operatively coupled to a physical layer interface (Crinion Figure 8; col 5, ll 66-67; col 6, l 66 - col 7, l 3; col 8, ll 17-19; col 8, ll 34-37: MAC (Ethernet) access for data frames, input and output; interface to physical layer blocks; col 5, ll 42-47: packet buffer (MAC buffer))

Crinion does not explicitly disclose a traffic shaper. However, Hussain discloses:

a traffic shaper; (Hussain col 4, ll 42-43; ; col 7, ll 36-39: ingress policing), including a first rate buffer (Hussain col 4, ll 44-50: col 7, ll 5-11: rate control based on the flow to which packet belongs (packet flow, packet buffering)), an ingress bus transmitter (Hussain col 8, ll 31-33; col 8, ll 38-41: ingress processor (transmitter)); an egress bus receiver (Hussain col 8, ll 31-33; col 8, ll 38-41:

egress processor (receiver)), and a second rate buffer (Hussain col 4, ll 44-50: col 7, ll 5-11: rate control based on the flow to which packet belongs (packet flow, packet buffering))

operatively coupled to said media access controllers for discarding one or more frames from a network processor that exceed one or more bandwidth parameters prior to transmission to the media access controllers; (Hussain col 9, ll 57-64; col 10, ll 14-16: discards frames that do not conform to bandwidth requirements, rate limit egress (output) flow: must drop packet prior to transmission to output queue or MACs)

It would have been obvious to one of ordinary skill in the art to modify Crinion for a traffic shaper and discarding one or more frames that exceed a bandwidth requirement as taught by Hussain. One of ordinary skill in the art would have been motivated to employ the teachings of Hussain to perform a fair allocation of bandwidth with network packet based metering within a virtual network environment (Hussain col 1, ll 33-36; col 1, ll 43-49).

**Regarding Claim 2,** Crinion discloses a switching device comprising:

a plurality of physical layer interfaces for transmitting frames to a communication network; (Crinion Figure 8; col 8, ll 26-28; col 5, ll 66-67; col 6, ll 66 - col 7, ll 3; col 8, ll 17-19; col 8, ll 34-37: MAC (Ethernet) access for data frames, input/output)

Furthermore, Crinion discloses:

a plurality of network access modules, wherein each of said network access modules comprises a data link layer processor (Crinion Figure 8; col 8, ll 26-28; col 5, ll 66-67; col 6, ll 66 - col 7, ll 3; col 8, ll 17-19; col 8, ll 34-37: MAC (Ethernet) access for data frames, input/output), wherein each data link layer processor comprises: a plurality of media access controllers, wherein each media access controller is operatively coupled to a physical layer interface (Crinion Figure 8; col 5, ll 66-67; col 6, ll 66 - col 7, ll 3; col 8, ll 17-19; col 8, ll 34-37: MAC (Ethernet) access for data frames, input and output; interface to physical layer blocks; col 5, ll 42-47: packet buffer (MAC buffer))

Crinion does not explicitly disclose a network processor and a traffic shaper.

However, Hussain discloses:

a network processor for routing the frames towards the physical layer interfaces; (Hussain col 2, ll 32-36; col 2, ll 41-44: processor utilized to determine a packet flow rate (bandwidth));

a traffic shaper; (Hussain col 9, ll 57-64; col 10, ll 14-16: discards frames that do not conform to bandwidth requirements, rate limit egress (output) flow: must drop packet prior to transmission to output queue or MACs);

said traffic shaper is operatively coupled to said media access controllers, for discarding one or more frames from the network processor that exceeds one or more bandwidth parameters prior to transmission to the media access controllers; (Hussain col 9, ll 57-64; col 10, ll 14-16: discards frames that do not conform to bandwidth requirements, rate limit egress (output) flow: must

drop packet prior to transmission to output queue or MACs)

It would have been obvious to one of ordinary skill in the art to modify Crinion for a network processor, traffic shaper, and discarding one or more frames that exceed a bandwidth requirement as taught by Hussain. One of ordinary skill in the art would have been motivated to employ the teachings of Hussain to perform a fair allocation of bandwidth with network packet based metering within a virtual network environment. (Hussain col 1, ll 33-36; col 1, ll 43-49)

**Regarding Claim 3**, Crinion discloses the switching device of claim 2 wherein each media access controller is operatively coupled to a separate physical layer interface.

(Crinion Figure 8; col 5, ll 26-29: port block (210) disclose multiple MAC interfaces; col 6, l 66 - col 7, l 3: MAC layer (port blocks 210) supplies data to the PHY (physical layer); Figure 8 indicates a corresponding and separate interface point on the External PHY (physical layer) for each port block (MAC interface))

Crinion does not explicitly disclose a traffic shaper discarding frames in accordance with a Three Color Marker (TCM) algorithm.

However, Hussain discloses wherein the traffic shaper discards the one or more frames in accordance with a Three Color Marker (TCM) algorithm. (Hussain col 7, ll 15-19; col 10, ll 1-3: Three Color Marker (TCM) algorithm (RFC 2698) utilized to discard frames based on TCM requirements)

It would have been obvious to one of ordinary skill in the art to modify Crinion for a traffic shaper to discard frames in accordance with a Three Color Marker (TCM)

algorithm as taught by Hussain. One of ordinary skill in the art would have been motivated to employ the teachings of Hussain to perform a fair allocation of bandwidth with network packet based metering within a virtual network environment. (Hussain col 1, ll 33-36; col 1, ll 43-49)

**Regarding Claim 4**, Crinion discloses the switching device of claim 3.

Crinion does not explicitly disclose selecting a TCM algorithm from group consisting of a single rate TCM, a two rate TCM, or a combination.

However Hussain discloses wherein the TCM algorithm is selected from the group consisting of: single rate TCM, two rate TCM, and a combination thereof. (Hussain col 7, ll 15-19; col 10, ll 1-3; TCM: two rate TCM disclosed))

It would have been obvious to one of ordinary skill in the art to modify Crinion for selecting a TCM algorithm from group consisting of a single rate TCM, a two rate TCM, or a combination as taught by Hussain. One of ordinary skill in the art would have been motivated to employ the teachings of Hussain to perform a fair allocation of bandwidth with network packet based metering within a virtual network environment. (Hussain col 1, ll 33-36; col 1, ll 43-49)

**Regarding Claim 5**, Crinion discloses the switching device of claim 2.

Crinion does not explicitly disclose a traffic shaper comprising meter module and discard control logic.

However, Hussain discloses a traffic shaper comprising:

- a) a meter module for determining a flow rate associated with the frames received from the network processor; (Hussain col 2, ll 32-36; col 2, ll 41-44: processor utilized to determine a packet flow rate (bandwidth)) and
- b) a discard control logic for selectively discarding said one or more frames based upon the flow rate and the one or more bandwidth parameters. (Hussain col 9, ll 57-61; col 10, ll 14-16: drop (discard) frames selectively (based on criteria))

It would have been obvious to one of ordinary skill in the art to modify Crinion for a meter module and discard control logic as taught by Hussain. One of ordinary skill in the art would have been motivated to employ the teachings of Hussain to perform a fair allocation of bandwidth with network packet based metering within a virtual network environment. (Hussain col 1, ll 33-36; col 1, ll 43-49)

**Regarding Claim 6**, Crinion discloses the switching device of claim 5.

Crinion does not explicitly disclose a marker module.

However, Hussain discloses wherein the traffic shaper further comprises a marker module for marking the plurality of frames in accordance with a TCM algorithm. (Hussain col 7, ll 15-19; col 10, ll 1-3: mark frames based on TCM algorithm (discard, do not discard))

It would have been obvious to one of ordinary skill in the art to modify Crinion for a marker module as taught by Hussain. One of ordinary skill in the art would have been motivated to employ the teachings of Hussain in order to enable the capability to perform a fair allocation of bandwidth with network packet based metering within a



virtual network environment. (Hussain col 1, ll 33-36; col 1, ll 43-49)

**Regarding Claim 7**, Crinion discloses the switching device of claim 6.

Crinion does not explicitly disclose bandwidth parameters comprising a committed information rate (CIR) and an excess burst size (EBS).

However, Hussain discloses wherein the one or more bandwidth parameters comprise a committed information rate (CIR) and an excess burst size (EBS). (Hussain col 2, ll 64-67: committed information rate (CIR); col 10, ll 3-8: peak (excess) burst size: equivalent 2 burst sizes (committed, peak (excess))

It would have been obvious to one of ordinary skill in the art to modify Crinion for bandwidth parameters comprising a committed information rate (CIR) and an excess burst size (EBS) as taught by Hussain. One of ordinary skill in the art would have been motivated to employ the teachings of Hussain to perform a fair allocation of bandwidth with network packet based metering within a virtual network environment. (Hussain col 1, ll 33-36; col 1, ll 43-49)

**Regarding Claim 8**, Crinion discloses the switching device of claim 2.

Crinion does not explicitly disclose classifying frames based upon frame properties.

However, Hussain discloses wherein the traffic shaper comprises a flow search engine for classifying frames from the network processor based upon one or more properties associated with the frames. (Hussain col 8, ll 56-62; col 7, ll 62-64: flow classification for packets using header information (properties of packet))

It would have been obvious to one of ordinary skill in the art to modify Crinion for classifying frames based on frame properties as taught by Hussain. One of ordinary skill in the art would have been motivated to employ the teachings of Hussain in order to enable the capability to perform a fair allocation of bandwidth with network packet based metering within a virtual network environment. (Hussain col 1, ll 33-36; col 1, ll 43-49)

**Regarding Claim 9**, Crinion discloses the switching device of claim 8, wherein the flow search engine comprises a content addressable memory (CAM). (Crinion col 1, ll 52-54; col 2, ll 55-57; col 3, ll 3-4: CAM utilized in data frame processing)

**Regarding Claim 10**, Crinion discloses the switching device of claim 9, wherein the CAM associated with each of the plurality of data link layer processors consists of QoS rules pertaining to the associated plurality of physical layer interfaces. (Crinion col 1, ll 47-49; col 3, ll 26-27: set priority, determination of quality of service (QoS) for data frame(s))

**Regarding Claim 11**, Crinion discloses the switching device of claim 2, wherein data link layer processors are media access controller (MAC) processors. (Crinion col 8, ll 26-28; col 5, ll 66-67; col 6, l 66 - col 7, l 3; col 8, ll 17-19; col 8, ll 34-37: MAC (Ethernet, 802.3 LAN users) access for data frames)

**Regarding Claim 12**, Crinion discloses the switching device of claim 2, wherein the

switching device is selected from the group consisting of: a router, a multi-layer switching device, and a switch blade. (Crinion col 2, ll 50-51; col 4, ll 45-48: switch (switching device))

### ***Response to Arguments***

3 Applicant's arguments have been fully considered but they were not persuasive. .

A. Applicant argues: *Crinion fails to disclose "a plurality of network access modules, wherein each of said network access modules comprises a data link layer processor, wherein each data link layer processor comprises: a plurality of media access controllers, wherein each media access controller is operatively coupled to a physical layer interface: (Remarks Page 5, Line 8 - Page 8, Line 2)*

Crinion discloses in Figure 8 (PDX 200a, PDX 200b) a structure equivalent to a network access module. Crinion discloses in Figure 8 (210a in PDX 200a and 210b in PDX 200b) a series of ports (data link layer). Each port in Figure 8 is a MAC interface or data link layer interface. (Crinion col 5, ll 26-29: port block 210 contains media access control) Crinion in Figure 8 (210a and 210b) discloses multiple ports indicating multiple MAC interfaces or equivalent MAC (210) interface(s) corresponding to Application's Figure 2 drawing. And, Crinion in Figure 8 indicates that each MAC interface has a corresponding interface point (indicated by an arrow) within the External PHYs of Figure 8 or physical layer of communications structure. (Crinion Figure 8; col 5, ll 26-29: port block (210)

discloses multiple MAC interfaces; col 6, l 66 - col 7, l 3: MAC layer (port blocks 210) supplies data to the PHY (physical layer); Figure 8 indicates a corresponding and separate interface point on the External PHY (physical layer) for each port block (MAC interface))

Examiner feels Crinion discloses a corresponding configuration for the MAC interface and PHY interface as indicated by Applicant's invention.

B. Applicant argues: *Rejection of Claims 3 - 12 (Remarks Page 8, Lines 3-6)*

Claims 3 - 12 depend from independent Claim 2. Responses to arguments against Claims 1 and 2 also address arguments against dependent claims.

C. Applicant argues: *Rejection of Claims 3 - 12 (Remarks Page 8, Lines 7-9)*

This argument is based on a newly amended claim limitation and is addressed in the current Office Action.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kyung Hye Shin whose telephone number is (571) 272-3920. The examiner can normally be reached on 9:30 am - 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tonia L. Dollinger can be reached on (571) 272-4170. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kyung Hye Shin/  
Examiner  
Art Unit 2443

February 15, 2010

